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51

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,172	01/03/2002	Louis L. Hsu	728-221 (YOR9-2001-0603 U)	7827
7590	03/01/2004		EXAMINER	
<p>Paul J. Farrell, Esq. DILWORTH &amp; BARRESE, LLP 333 Earle Ovington Blvd. Uniondale, NY 11553</p>				STEIN, STEPHEN J
		ART UNIT		PAPER NUMBER
		1775		

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/038,172	HSU ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Stephen J Stein	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 11/24/2003.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) 8-18 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-7 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

## **DETAILED ACTION**

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly added limitation “material arrangements” is new matter.

4. Claims 4 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 4 recites the limitation “The hybrid substrate according to claim 1, wherein each of the at least two different materials is selected from the group consisting of GaAs, InP, silicon wafer, GaN-based high-electron mobility transistors (HEMTs), and optoelectronic devices”.

6. The limitation “GaN-based high-electron mobility transistors (HEMTs), and optoelectronic devices” make the claim indefinite because it is unclear how the GaN HEMTs and optoelectronic devices” are *material arrangements* within the scope of the Markush group. HEMTs and optoelectronic devices are devices, not material arrangements. Further, it is unclear

if applicants are intending the limitation “optoelectronic devices” to mean all optoelectronic devices or just GaN-based optoelectronic devices.

7. Amended claim 7 now recites “The hybrid substrate according to Claim 1, wherein each of the plurality of pockets has a greater surface area of a cross-section of the at least two different material arrangements, the cross-section being parallel to a surface of the hybrid substrate”. This limitation is unclear to the examiner and applicants’ specification does not define or use this terminology. If applicants are attempting to claim in claim 7, that the materials in the pockets are planarized so that the top surface of the material is approximately co-planar with the top surface of the substrate (See applicants’ specification, page 3, lines 9-12), it should be expressly claimed.

***Claim Rejections - 35 USC § 102***

8. Claims 1-3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4,851,078 (Short et al.).

Short teaches a SOI substrate having two (plurality of) with moats or grooves (pockets) which are filled with an oxide layer and polycrystalline silicon layer in the grooves and grown (bonded to) over the oxide layer (col. 4, lines 8-25 and Figures 5-7). The reference further discloses that the two materials (oxide and polycrystalline material) are coplanar with the top surface of the substrate (See Figures 5-7).

***Claim Rejections - 35 USC § 103***

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Short et al. in view of US 5,506,433 (Ohori et al.).

Art Unit: 1775

As stated above, Short teaches the claimed hybrid substrate, but fails to teach the claimed the substrate.

Ohori teaches that it is known that that SOI substrates used in HEMTs are known to be formed on single crystal sapphire substrates (Abstract and col. 1, lines 10-31).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use Sapphire as the substrate for the hybrid substrate disclosed by short because the reference teaches its use for the same purpose.

#### *Response to Arguments*

10. Regarding the rejection under 35 USC 112(2) to claim 4, applicants have amended claim 4 to recite “material arrangements” and argue that this amendment thus encompasses all recited elements within the scope of the Markush group. This argument has been considered, but not deemed persuasive. The limitations GaN-based high-electron mobility transistors (HEMT’s) and optoelectronic devices are not material arrangements or materials, but rather devices. They therefor are not encompassed within the group of material arrangements. Further it is unclear how these devices can be within a pocket on a substrate.

Regarding the rejection under 35 USC 112(2<sup>nd</sup>) to claim 7, applicants have amended the claim, but the claim is still unclear and indefinite to the examiner for the reasons stated above. The rejection under 35 USC 112(2<sup>nd</sup>) paragraph has been maintained.

Regarding the rejection under 35 USC 102(b) to claims 1-3 and 6, and the rejection to claim 5 under 35 USC 103(a), applicants have amended the claims to now recite that the pockets patterned on the substrate have at least two different “material arrangements deposited” within

Art Unit: 1775

the respective pocket. Applicants argue that the Short reference states that the moats are oxidized to provide the oxide layer and thus “the oxide is the result of a pre-existing material i.e. the monocrystalline silicon wafer that composes the walls of the moats 25, and is not *deposited* material arrangements as recited in Claim 1 as amended”. This argument has been considered, but not deemed persuasive. The Short reference clearly discloses that the moats (pockets) have two different material arrangements within them. An oxide and polycrystalline silicon (See figure 4.) The amended limitation “*deposited*”, is merely a process limitation defining how the material arrangements got into the pockets. Absent a showing of a materially different product, the limitation “*deposited*”, does not provide a patentable distinction over the prior art. Process limitations in product claims are generally not dispositive on patentability unless it is shown that the process limitations produce a materially different product. MPEP §2113. These rejections are maintained.

### ***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1775

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Stein whose telephone number is 572-272-1544. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:00 p.m. If the attempts to reach the examiner are unsuccessful, the examiner's supervisor, Deborah Jones can be reached by dialing 572-272-1535. The official fax number is 703-872-9306.

February 21, 2004

*Stephen Stein*  
Stephen J. Stein  
Primary Examiner  
Art Unit 1775